

Name

TITLE OF EXPERIMENT

THE KERR EFFECT: EXPERIMENT No 11

MODERN PHYSICS LAB

PHYS 393/6 COURSEWORK

REPORTING SHEET

PART A: SCIENTIFIC KNOWLEDGE AND PLANNING	15
Aim:	1
<p>Methodology: Draw your set up ,explaining the use of the different components you will use to achieve your aim.</p> <p>Note: You will receive 1 Mark for clear drawing 1 Mark for identifying equipment 1 Mark for explaining the role of this equipment in the experiment</p>	3

MULTIPLE CHOICE SECTION

8

Q1: The **Kerr effect** is the change of the _____ of a material in response to an applied E field

- A) work function B) refractive index C) consistency D) surface

Q2: The applied E field induces _____ in the medium/sample in the direction of the field

- A) waves B) maxwell's equations C) birefringence D) crystal optics

Q3: If the material/sample is placed between two "crossed" (perpendicular) linear _____, no light will be transmitted when the electric field is turned off, while nearly all of the light will be transmitted for some optimum value of the electric field.

- A) polarisers B) optical plates C)transistors D)wavelengths

Q4: The values of the Kerr constant K depend on the medium and are about $9.4 \times 10^{-14} \text{ m V}^{-2}$ for _____, and $4.4 \times 10^{-12} \text{ m V}^{-2}$ for nitrobenzene.

- A)Earth B) Water C)Air D)Water resources

Q5: The Kerr effect is distinct from the Pockels effect in that the induced index change is _____ to the *square* of the electric field instead of varying linearly with it.

- A)Inverse proportional B) independent C) directly proportional D) dependent

Q6: A Kerr Cell has the disadvantage of that the best available material, nitrobenzene is:

- A)very expensive B) odourless C) poisonous D) difficult to obtain

Q7: Nitrobenzene is a _____ liquid

- A)polar B) transparent C)green coloured D)rare

Q8: Pockels cells, operate at higher voltages than Kerr Cells

- A)TRUE B)FALSE

LIST A NUMBER OF THE FACTORS THAT CAN AFFECT THE EXPERIMENT

3

PART B: OBTAINING EVIDENCE	30
Your data. Use the correct units and convert appropriately.	

PART C: ANALYSING AND CONSIDERING YOUR EVIDENCE	
Graph (use graph paper)	
Calculations	
My evidence leads to the following result.	
Compare your results with theoretical values.	

PART D: EVALUATION [10 MARKS]	
What was good or bad about the experiment you did was ...	
Some ways you could improve the experiment were...	
You had the following anomalies.	
The explanation for your anomalies was	
You believe my evidence is reliable/unreliable for the following reasons.	